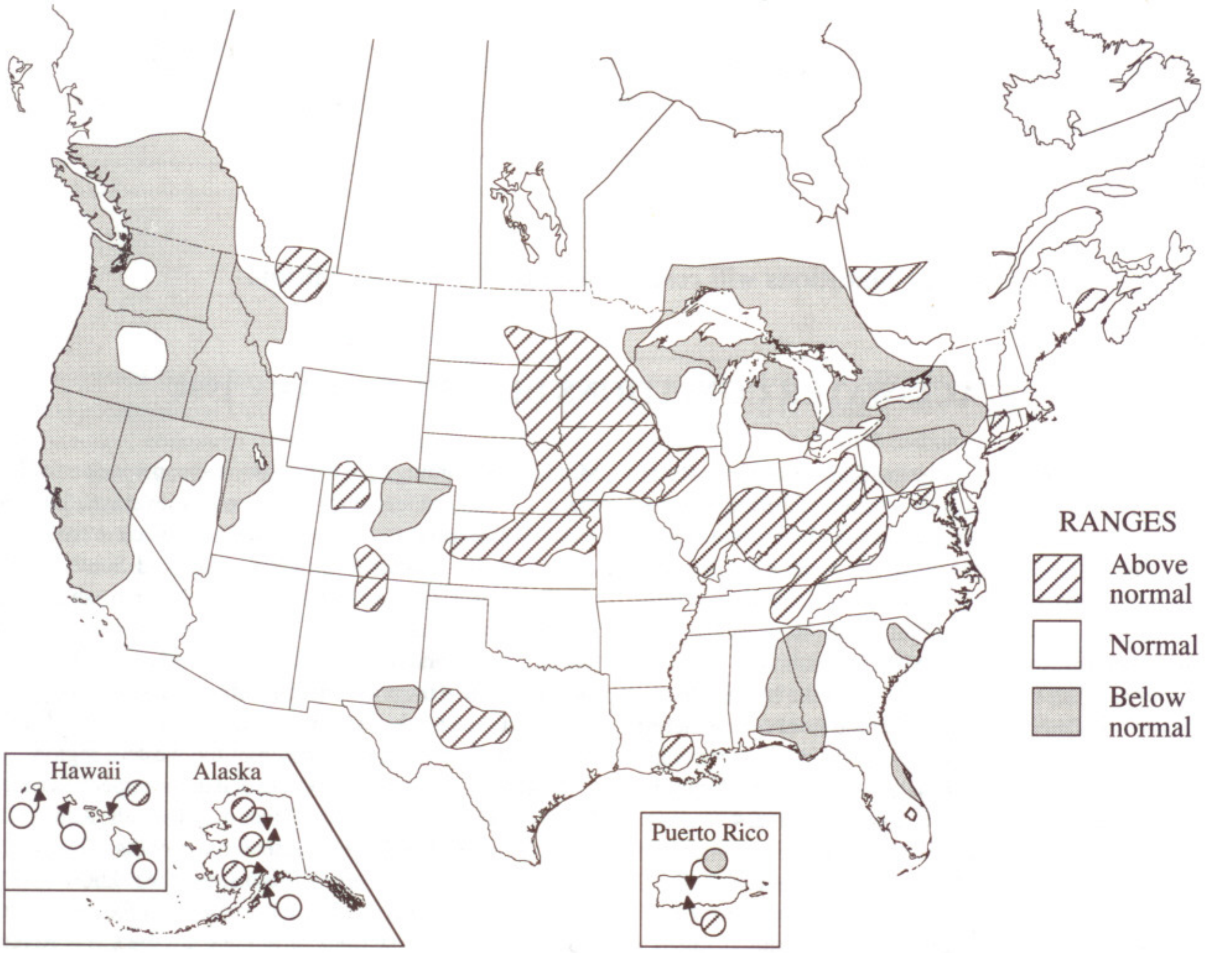
National Water Conditions

UNITED STATES
Department of the Interior
Geological Survey

CANADA
Department of the Environment
Water Resources Branch

JANUARY 1994

STREAMFLOW DURING JANUARY



Runoff from heavy rain on top of about 2 feet of snowpack caused widespread flash flooding and some river flooding along the Ohio River in West Virginia and Ohio, January 27-30. Several ice jams were reported in headwater streams. Evacuations were necessary along Wheeling Creek near Elm Grove, West Virginia. The Ohio River crested above flood stage from Willow Island to Huntington, West Virginia. The highest crest was 8.9 feet above flood stage at Racine, Ohio. The river crested 6.0 feet above flood stage at Point Pleasent, West Virginia, and 3.4 feet above flood stage at Parkersburg, West Virginia.

Mountain snowpack throughout much of the West was below normal to much below normal. The only areas with normal to above-normal snowpack were eastern Wyoming, the Black Hills in Wyoming and South Dakota, southeastern Colorado, northern New Mexico, and central Alaska. Predicted April-July snowmelt runoff ranges from 40-80 percent of average throughout much of the western region.

Streamflow remains above normal in the upper and central Midwest. Flow on the Saline River near Russell, Kansas, has been above normal for 13 consecutive months. Six other index stations in this region have had above-normal flow for at least nine consecutive months. Four streamflow index stations in the Northwest have been below normal for five consecutive months and two others have had below-normal flow for the last four months.

Below-normal streamflow occurred in 23 percent of the area of the conterminous United States and southern Canada during January, compared with 15 percent in December. Above-normal range streamflow occurred in 12 percent of this area, compared with 21 percent in December.

The combined flow of the three largest rivers in the lower 48 States—the Mississippi, St. Lawrence, and Columbia Rivers—decreased contraseasonally by 24 percent in January and fell below the median flow for the first time since July 1992. Combined flow was 949,000 cubic feet per second which is 3 percent below the median flow for January.

Monthend index reservoir contents were in the below-average range to 20 of 100 reporting sites compared with 30 of 100 at the end of January 1993. Contents were in the above-average range at 42 sites compared with 47 last year.

Mean January elevations at the four master gages on the Great Lakes (provisional National Ocean Service data) were in the normal range and above median on Lakes Superior, Huron, and Erie and below normal on Lake Ontario.

Utah's Great Salt Lake level rose 0.2 foot during January, ending the month at 4,200.8 feet above National Geodectic Vertical Datum. Lake level was 0.5 foot higher than a year ago and 11.05 feet lower than the maximum of record.

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Reporting of ground-water conditions will resume with the June 1994 edition.

SURFACE-WATER CONDITIONS DURING JANUARY 1994

A flash flood on January 16 in the Santa Margarita River basin caused damage at Camp Pendleton, California. In response to this flood, the Santee, California, field office implemented a flood alert network in the basin. A reliable telemetry system was installed in gaging stations in the basin to send out alerts to a base station personal computer anytime a preprogrammed threshold stage value is reached.

Widespread flash flooding occurred in the lower Mississippi and Ohio Valley due to rainfall amounts of over 4 inches the week of January 23-29. Meridian, Mississippi, received 5.3 inches of rain, Jackson, Mississippi, 4.5 inches, Memphis, Tennessee, 3.4 inches, and Baton Rouge, Louisiana, 4.7 inches.

On January 27, heavy rain spread into the Ohio Valley and caused widespread flash flooding and some river flooding due to runoff maximized by partially frozen ground and snowmelt. Parkersburg, West Virginia, had 1.9 inches of rain on top of a snowpack of about 2 feet. Several ice jams were reported in headwater streams. Evacuations were necessary along Wheeling Creek near Elm Grove, West Virginia. The Ohio River crested above flood stage from Willow Island to Huntington, West Virginia. Crest height above flood stage was 1.9 feet at Willow Island, 3.4 feet at Parkersburg, 8.9 feet at Racine, Ohio, 3.7 feet at Pomerey, Ohio, 6.0 feet at Point Pleasent, West Virginia, 0.1 foot at Gallipolis, Ohio, and 0.4 foot at Huntington, West Virginia. These crests occurred on January 29 and 30.

Mountain snowpack throughout much of the West was below normal to much below normal. All of Arizona, Utah, Nevada, California, Oregon, and most of Washington, Idaho, Montana, Wyoming, and Colorado, had snowpack as of February 1, 1994, of less than 90 percent of average. The only areas with normal to above-normal snowpack were eastern Wyoming, the Black Hills in Wyoming and South Dakota, Southeastern Colorado, northern New Mexico, and central Alaska. Last year at this same time, mountain snowpack levels were normal to much above normal throughout the West with the exception of the northern Columbia River basin in Canada. Predicted April-July snowmelt runoff ranges from 40 to 80 percent of average through much of the western region.

Streamflow remains above normal in the upper and central Midwest. Flow on the Saline River near Russell, Kansas, has been above normal for 13 consecutive months. Flow on the Pecatonica River at Freeport, Illinois, and the Elkhorn River at Waterloo, Nebraska, has been above normal for 11 consecutive months. Other stations of interest are the Crew River at Rockford, Minnesota, and Minnesota River near Jordan, Minnesota, above normal for 10 consecutive months, and Cedar River at Cedar Rapids, Iowa, and Nishnabotna River above Hamburg, Iowa, which have been above normal for nine consecutive months.

Streamflow has been below normal on the Snake River at Weiser, Idaho, the Columbia River at The Dalles, Oregon, the Willamette River at Salem, Oregon, and the Chehalis River near Grand Mound, Washington, for five consecutive months. Other stations of interest in the Northwest are Smith River near Crescent City, California, and the Umpqua River near Elkton, Oregon, which have had below-normal flow for four consecutive months.

NEW EXTREMES DURING JANUARY 1994 AT STREAMFLOW INDEX STATIONS

Station number	Stream and place of determination	Drainage area (square miles)	Previous January extremes (period of record): Years of record	Previous January extremes (period of record): Monthly mean in cfs (year)	Previous January extremes (period of record): Daily mean in cfs (year)	January 1994: Monthly mean in cfs	January 1994: Percent of median	January 1994: Daily mean in cfs	January 1994: Day
			LOW FLOWS						
50038100	Rio Grande de Manati at Highway 2 near Manati, Puerto Rico	197	22	105 (1984)	82.0 (1984)	92.6	44	75.0	28
			HIGH FLOWS						
05062000	Buffalo River near Dilworth, Minnesota	1,040	61	53.5 (1987)	75.0 (1978)	71.0	350	79.0	27

Below-normal streamflow occurred in 23 percent of the area of the conterminous United States and southern Canada during January, compared with 15 percent in December. Above-normal range streamflow occurred in 12 percent of this area, compared with 21 percent in December.

Two new extreme January monthly mean flows, one maximum and one minimum, were recorded at index gaging stations. A new maximum flow of 71.0 cubic feet per second (cfs) was recorded on Buffalo River near Dilworth, Minnesota. This flow was 350 percent of the median January monthly mean. Flow was at a new minimum monthly mean for January on Rio Grande de Manati at Highway 2 near Manati, Puerto Rico. Flow averaged 92.6 cfs, only 44 percent of the median for the month. This station has had below-normal flow for the last 4 months and has set two new extremes in that time period.

The combined flow of the three largest rivers in the lower 48 States—the Mississippi, St. Lawrence, and Columbia Rivers—decreased contraseasonally by 24 percent in January and fell below the median flow for the first time since July 1992. Combined flow was 949,000 cfs, which is 3 percent below the median. Flow of the St. Lawrence River decreased 12 percent but remained in the normal range. The Mississippi River at Vicksburg flow decreased by 29 percent and fell into the normal range after six consecutive months of above-normal flow. The flow in the Columbia River remained below normal for the fifth consecutive month, as mentioned above, despite a 7 percent increase from December. The flow in the Columbia River was only 77 percent of the January median.

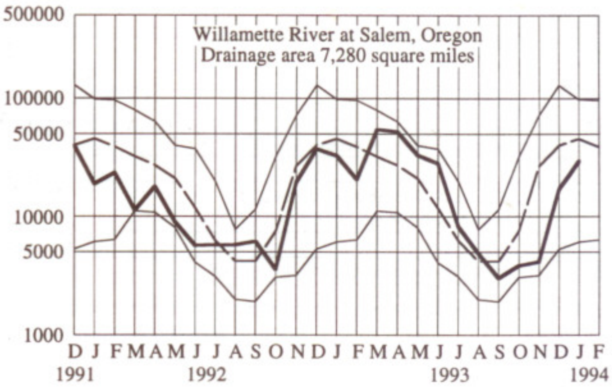
Monthend index reservoir contents were in the below-average range at 20 of 100 reporting sites compared with 30 of 100 at the end of January 1993. Contents were in the above-average range at 42 sites compared with 47 last year. Reservoirs were below average in parts of Texas, Idaho, Nevada, Bear Lake in Utah-Idaho, and Lake Tahoe in California-Nevada. Reservoirs were above average in New Mexico, Arizona, Lake Mead and Lake Mohave in Arizona, Nevada, Wyoming, Oklahoma, South Dakota, the Tennessee Valley, South Carolina, Maryland, and Nova Scotia, Canada. Angostura Reservoir and Belle Forche Reservoir in South Dakota had significant increases in contents since January 1993. Angostura increased from 60 percent of normal maximum to 92 percent. Belle Forche increased from 22 percent to 78 percent. High Rock Lake in North Carolina decreased from 99 percent of normal maximum in January 1993 to 52 percent this year.

Mean January elevations at the four master gages on the Great Lakes (provisional National Ocean Service data) were in the normal range and above median on Lakes Superior, Huron, and Erie and below normal on Lake Ontario. All four lakes showed declines from December levels. These declines ranged from 0.29 foot on Lake Erie to 0.03 foot on Lake Ontario.

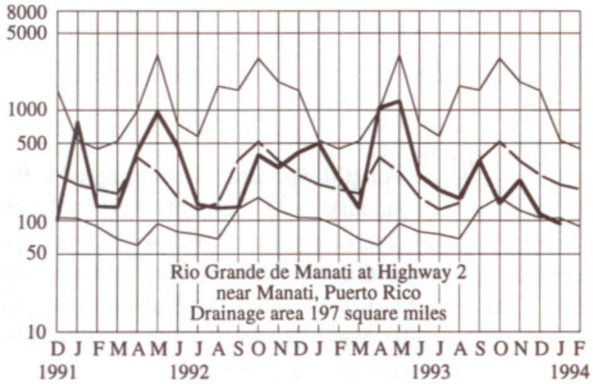
Utah's Great Salt Lake level rose during January, ending the month at 4,200.8 feet above National Geodetic Vertical Datum, a rise of 0.2 foot from the end of December 1993. The lake is 0.5 foot higher than a year ago and 11.05 feet lower than the maximum of record, which occurred in June 1986 and March-April 1987.

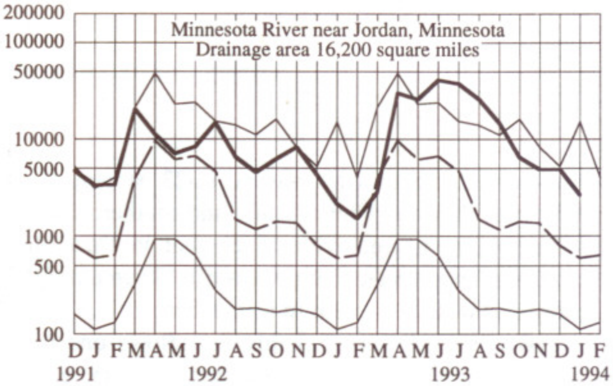
MONTHLY MEAN DISCHARGE OF SELECTED STREAMS

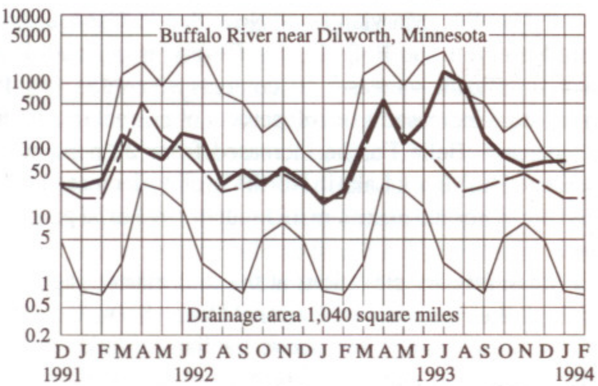
Area between light-weight solid lines indicates range between highest and lowest record for the month. Dashed line indicates median of monthly values for reference period 1961-90. Heavy line indicates mean for current period.

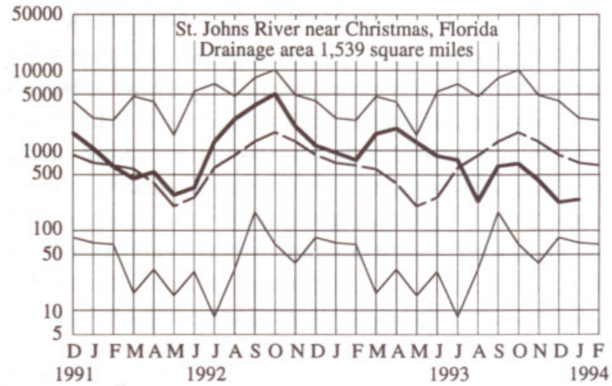


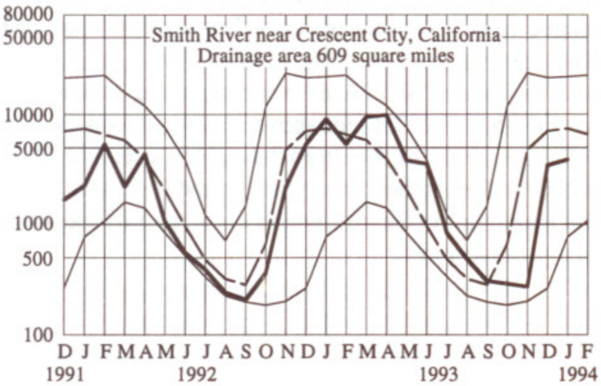
DISCHARGE, IN CUBIC FEET PER SECOND

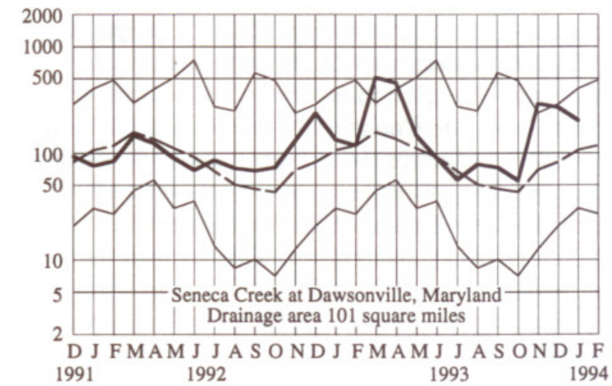






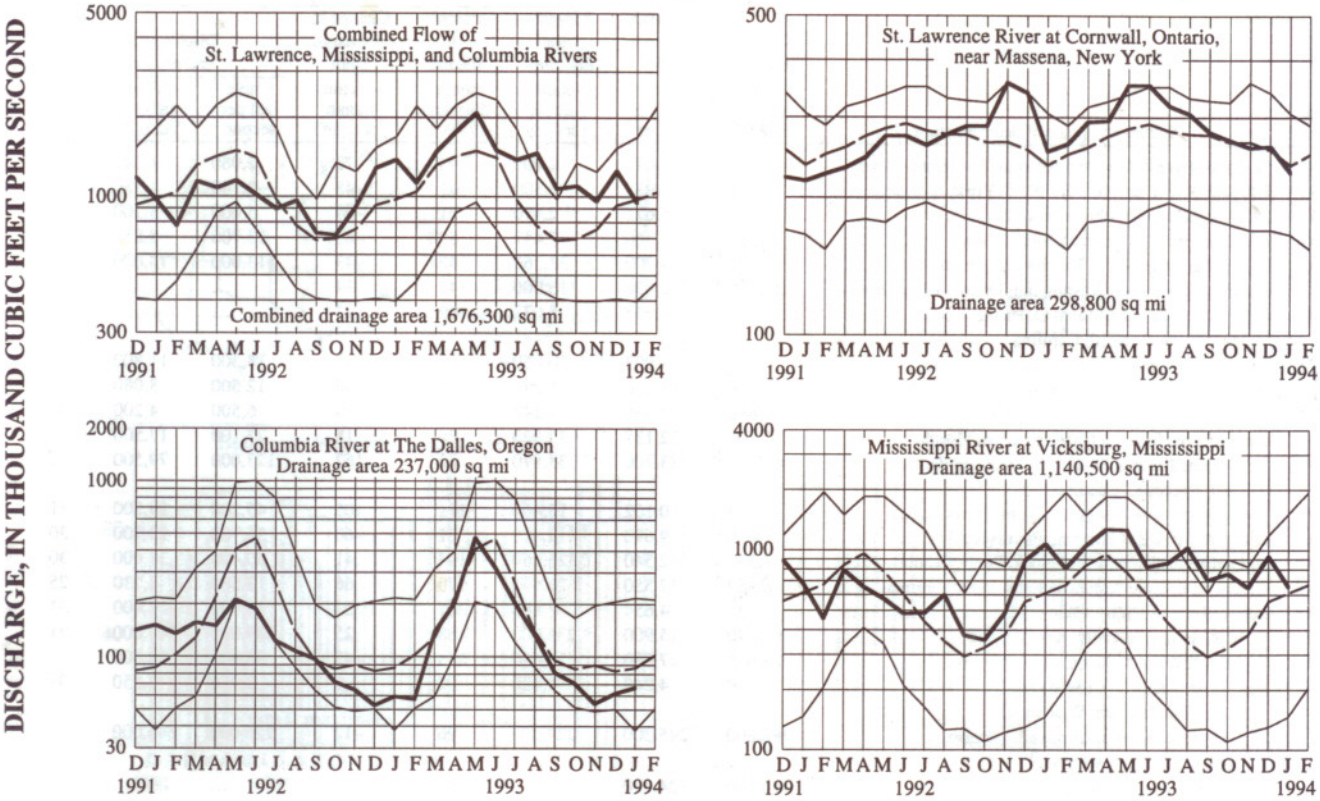






HYDROGRAPHS FOR THE "BIG THREE" RIVERS

Area between light-weight solid lines indicates range between highest and lowest record for the month. Dashed line indicates median of monthly values for reference period 1961-90. Heavy line indicates mean for current period.



Provisional data; subject to revision

DISSOLVED SOLIDS AND WATER TEMPERATURES FOR JANUARY 1994 AT DOWNSTREAM SITES ON TWO LARGE RIVERS

Station number	Station name	January data of following calendar years	Stream discharge during month: Mean (ft³/s)	Dissolved-solids concentration [1]: Minimum (mg/L)	Dissolved-solids concentration [1]: Maximum (mg/L)	Dissolved-solids discharge [1]: Mean (tons per day)	Dissolved-solids discharge [1]: Minimum (tons per day)	Dissolved-solids discharge [1]: Maximum (tons per day)	Water temperature [2]: Mean (°C)	Water temperature [2]: Minimum (°C)	Water temperature [2]: Maximum (°C)
01463500	Delaware River at Trenton,	1994	7,457	97	146	2,364	1,733	5,474	0	0	1.5
	New Jersey, (Morrisville,	1945-93	12,460	62	201	[3]2,735	758	20,800	[3]2.0	0	7.5
	Pennsylvania)	(Extreme yr)		(1951,	(1959)		(1981)	(1976)			
			[4]8,381	1960)							
06934500	Missouri River at Hermann,	1994	61,230	218	674	89,100	28,300	120,000	2.0	0	4.0
	Missouri. (60 miles west of	1976-93	50,970	159	553	52,130	18,100	160,000	2.5	0	7.5
	St. Louis, Missouri)	(Extreme yr)		(1979)	(1977)		(1981)	(1985)			
			[4]42,640								

[1]Dissolved-solids concentrations, when not analyzed directly, are calculated on basis of measurements of specific conductance.
[2]To convert °C to °F: [(1.8 x °C) + 32] = °F.
[3]Mean for 8-year period (1983-91).
[4]Median of monthly values for 30-year reference period, water years 1961-90, for comparison with data for current month.

FLOW OF LARGE RIVERS DURING JANUARY 1994

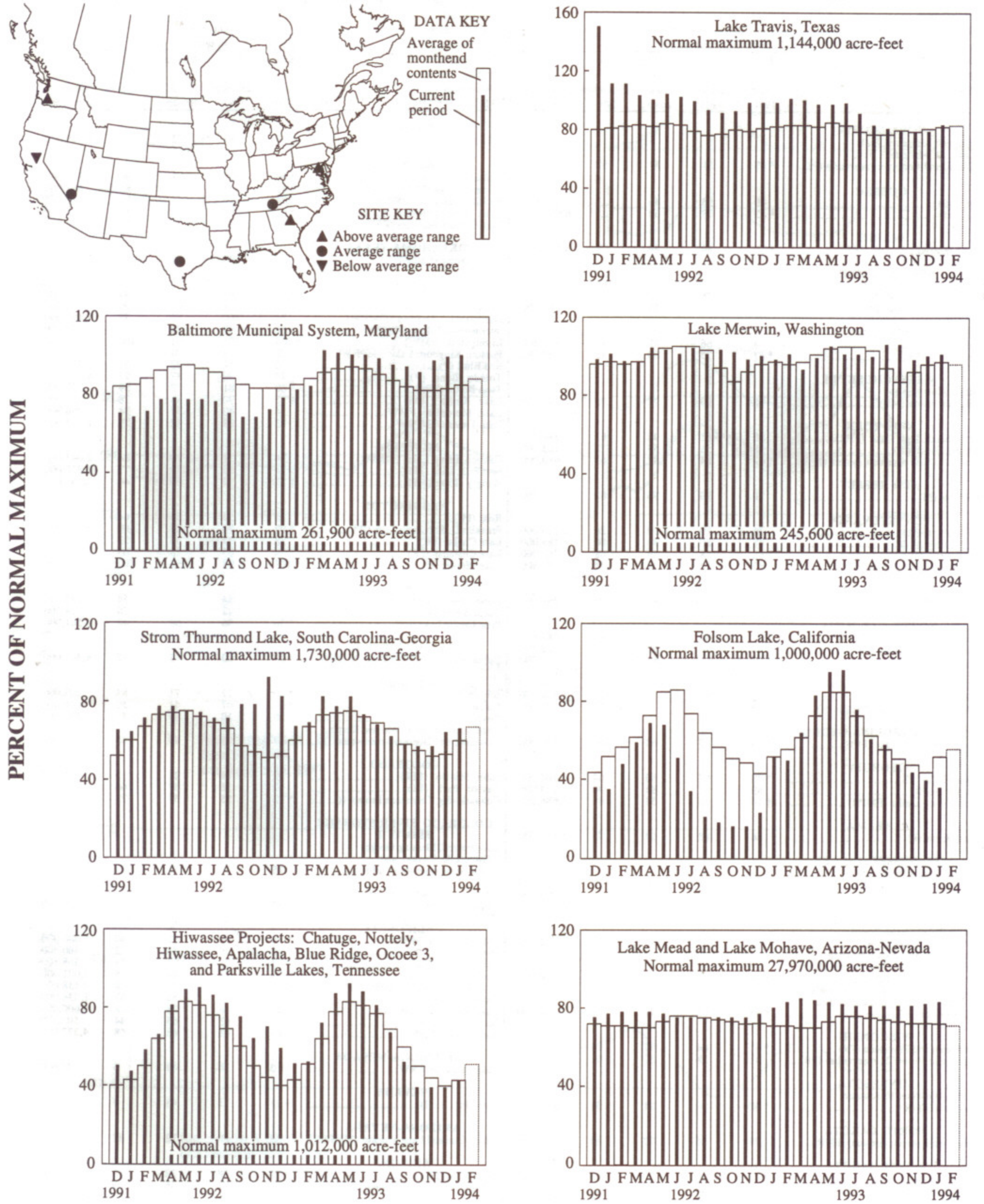
Station number	Stream and place of determination	Drainage area (square miles)	Average discharge through September 1991 (cubic feet per second)	January 1994: Monthly mean discharge (cubic feet per second)	January 1994: Percent of median monthly discharge 1961–90	January 1994: Change in discharge from previous month (percent)	January 1994: Discharge near end of month: Cubic feet per second	January 1994: Discharge near end of month: Million gallons per day	Date
01014000	St. John River below Fish River at Fort Kent, Maine	5,665	9,693	2,600	93	–73	2,080	1,340	31
01318500	Hudson River at Hadley, New York	1,664	2,925	1,300	81	–48	2,140	1,380	31
01357500	Mohawk River at Cohoes, New York	3,456	5,673	† 2,470	61	–64	5,000	3,200	31
01463500	Delaware River at Trenton, New Jersey	6,780	11,660	7,457	89	–63	13,700	8,850	31
01570500	Susquehanna River at Harrisburg, Pennsylvania	24,100	34,200	33,360	142	–43	113,000	73,000	31
01646500	Potomac River near Washington, District of Columbia	11,560	[1]11,070	[1]16,000	141	–24	...	...	...
02105500	Cape Fear River at William O. Huske Lock, near Tarheel, North Carolina.	4,852	4,933	5,072	69	97	...	...	...
02131000	Pee Dee River at Peedee, South Carolina	8,830	9,903	10,860	71	52	18,300	11,800	31
02226000	Altamaha River at Doctortown, Georgia	13,600	13,570	11,270	54	48	12,500	8,080	30
02320500	Suwannee River at Branford, Florida	7,880	7,038	4,548	84	73	6,500	4,200	31
02358000	Apalachicola River at Chattahoochee, Florida	17,200	22,137	† 17,920	56	18	27,100	17,500	31
02467000	Tombigbee River at Demopolis lock and dam, near Coatopa, Alabama.	15,385	23,700	35,870	82	162	123,000	79,500	31
02489500	Pearl River near Bogalusa, Louisiana	6,573	10,102	15,460	111	105	45,200	29,200	31
03049500	Allegheny River at Natrona, Pennsylvania	11,410	[1]19,690	† [1]12,410	61	–60	36,700	23,700	30
03085000	Monongahela River at Braddock, Pennsylvania	7,337	[1]12,540	* [1]26,160	194	41	50,400	32,600	30
03193000	Kanawha River at Kanawha Falls, West Virginia	8,367	12,550	* 26,590	170	66	13,500	8,730	25
03234500	Scioto River at Higby, Ohio	5,131	4,654	7,480	201	33	34,600	22,400	31
03294500	Ohio River at Louisville, Kentucky[2]	91,170	115,900	* 236,000	188	25	539,000	348,000	31
03377500	Wabash River at Mount Carmel, Illinois	28,635	27,880	30,620	113	–45	83,600	54,000	31
04084500	Fox River at Rapide Croche Dam, near Wrightstown, Wisconsin[2]	6,010	4,248	4,130	102	–9	3,950	2,550	31
04264331	St. Lawrence River at Cornwall, Ontario, near Massena, New York[3]	298,800	245,300	227,000	96	–12	226,000	146,000	31
02NG001	St. Maurice River at Grand Mere, Quebec	16,300	[1]24,290	...	...	...	...	...	...
05082500	Red River of the North at Grand Forks, North Dakota	30,100	2,565	1,554	120	–19	...	...	...
05133500	Rainy River at Manitou Rapids, Minnesota	19,400	9,036	8,480	91	–14	8,870	5,730	28
05330000	Minnesota River near Jordan, Minnesota	16,200	7,062	† 2,663	445	–45	1,800	1,160	31
05331000	Mississippi River at St. Paul, Minnesota	36,800	[1]15,890	† [1]9,711	182	–26	8,090	5,230	30
05365500	Chippewa River at Chippewa Falls, Wisconsin	5,650	5,072	2,640	88	–24	3,100	2,000	31
05407000	Wisconsin River at Muscoda, Wisconsin	10,400	8,666	7,110	107	1	6,600	4,270	31
05446500	Rock River near Joslin, Illinois	9,549	6,161	† 10,360	267	44	7,870	5,090	31
05474500	Mississippi River at Keokuk, Iowa	119,000	64,070	47,750	122	–18	47,400	30,600	31
06214500	Yellowstone River at Billings, Montana	11,795	6,965	2,420	92	–10	2,100	1,360	31
06934500	Missouri River at Hermann, Missouri	524,200	76,940	61,230	144	–35	64,900	42,000	31
07289000	Mississippi River at Vicksburg, Mississippi[4]	1,140,500	583,000	655,100	107	–29	829,000	536,000	31
07331000	Washita River near Dickson, Oklahoma	7,202	1,584	538	108	–70	573	370	31
08276500	Rio Grande below Taos Junction Bridge, near Taos, New Mexico.	9,730	757	† 579	124	2	588	380	31
09315000	Green River at Green River, Utah	44,850	6,292	3,552	103	2	...	...	...
11425500	Sacramento River at Verona, California	21,251	18,810	† 13,250	65	–29	...	...	...
13269000	Snake River at Weiser, Idaho	69,200	18,220	† 12,700	72	–2	12,300	7,950	31
13317000	Salmon River at White Bird, Idaho	13,550	11,160	† 3,690	86	0	3,210	2,070	31
13342500	Clearwater River at Spalding, Idaho	9,570	15,290	† 4,620	65	41	3,130	2,020	31
14105700	Columbia River at The Dalles, Oregon[5]	237,000	[1]192,200	† [1]66,730	77	8	146,000	94,400	31
14191000	Willamette River at Salem, Oregon	7,280	[1]23,400	† [1]29,610	65	73	10,200	6,590	31
15515500	Tanana River at Nenana, Alaska	25,600	24,200	* 8,426	128	–21	8,000	5,200	31
08MF005	Fraser River at Hope, British Columbia	83,800	95,720	† 28,280	81	–2	34,800	22,500	31

[1]Adjusted.
[2]Records furnished by Corps of Engineers.
[3]Records furnished by Buffalo District, Corps of Engineers, through International St. Lawrence River Board of Control. Discharges shown are considered to be the same as discharge at Ogdensburg, N.Y., when adjusted for storage in Lake St. Lawrence.
[4]Records of daily discharge computed jointly by Corps of Engineers and Geological Survey.
[5]Discharge determined from information furnished by Bureau of Reclamation, Corps of Engineers, and Geological Survey.

* Above–normal range
† Below–normal range

USABLE CONTENTS OF SELECTED RESERVOIRS NEAR END OF JANUARY 1994

[Contents are expressed in percent of reservoir (system) capacity. The usable capacity of each reservoir (system) is shown in the column headed "Normal maximum" in the table Usable contents of selected reservoir systems.]



USABLE CONTENTS OF SELECTED RESERVOIRS AND RESERVOIR SYSTEMS NEAR END OF JANUARY 1994

[Contents are expressed in percent of reservoir or reservoir system capacity. The usable capacity of each reservoir or reservoir system is shown in the column headed "Normal maximum"]

Reservoir or reservoir system Principal uses: F-Flood control I-Irrigation M-Municipal P-Power R-Recreation W-Industrial	Percent of normal maximum End of January 1994	End of January 1993	Average for end of January	End of December 1993	Normal maximum (acre-feet)[1]
NOVA SCOTIA					
Rossignol, Mulgrave, Falls Lake, St. Margaret's Bay, Black, and Ponhook reservoirs (P)	* 67	31	57	62	[2]226,300
QUEBEC					
Allard (P)	49	55	46	...	280,600
Gouin (P)	* 83	79	59	...	6,954,000
MAINE					
Seven reservoir systems (MP)	* 69	49	49	78	4,146,000
NEW HAMPSHIRE					
First Connecticut Lake (P)	42	55	37	66	76,450
Lake Francis (FPR)	57	75	52	85	99,310
Lake Winnipesaukee (PR)	* 64	49	58	73	165,700
VERMONT					
Harriman (P)	48	66	48	81	116,200
Somerset (P)	* 67	75	60	81	57,390
MASSACHUSETTS					
Cobble Mountain and Borden Brook (MP)	75	90	72	75	77,920
NEW YORK					
Great Sacandaga Lake (FPR)	50	61	46	61	786,700
Indian Lake (FMP)	58	56	55	72	103,300
New York City reservoir system (MW)	† 62	84	82	63	1,680,000
NEW JERSEY					
Wanaque (M)	78	90	76	82	85,100
PENNSYLVANIA					
Allegheny (FPR)	26	29	30	26	1,180,000
Pymatuning (FMR)	81	80	83	80	188,000
Raystown Lake (FR)	* 68	68	59	68	761,900
Lake Wallenpaupack (PR)	52	72	54	70	157,800
MARYLAND					
Baltimore Municipal System (M)	* 100	82	85	99	261,900
NORTH CAROLINA					
Bridgewater (Lake James) (P)	* 87	94	80	91	288,800
Narrows (Badin Lake) (P)	98	98	95	95	128,900
High Rock Lake (P)	† 52	99	66	51	234,800
SOUTH CAROLINA					
Lake Murray (P)	* 75	86	68	73	1,614,000
Lake Marion and Lake Moultrie (P)	70	91	69	73	1,777,000
SOUTH CAROLINA-GEORGIA					
Strom Thurmond Lake (FP)	* 66	67	60	64	1,730,000
GEORGIA					
Burton Lake (PR)	* 70	87	60	64	104,000
Sinclair (MPR)	89	91	84	90	214,000
Lake Sidney Lanier (FMPR)	† 44	66	53	41	1,686,000
ALABAMA					
Lake Martin (P)	66	88	69	73	1,375,000
TENNESSEE VALLEY					
Clinch Projects: Norris and Melton Hill Lakes (FPR)	* 44	42	36	38	2,293,000
Douglas Lake (FPR)	14	12	14	11	1,395,000
Hiwassee Projects: Chatuge, Nottely, Hiwassee, Apalachia, Blue Ridge, Ocoee 3, and Parksville Lakes (FPR)	43	51	43	39	1,012,000
Holston Projects: South Holston, Watauga, Boone, Fort Patrick Henry, and Cherokee Lakes (FPR)	* 48	48	36	45	2,880,000
Little Tennessee Projects: Nantahala, Thorpe, Fontana, and Chilhowee Lakes (FPR)	* 55	60	42	51	1,478,000
WISCONSIN					
Chippewa and Flambeau (PR)	* 61	64	47	75	365,000
Wisconsin River (21 reservoirs) (PR)	41	58	37	61	399,000
MINNESOTA					
Mississippi River Headwater System (FMR)	* 30	30	21	31	1,640,000
NORTH DAKOTA					
Lake Sakakawea (Garrison) (FIPR)	79	56	77	80	22,700,000
SOUTH DAKOTA					
Angostura (I)	* 92	60	70	84	130,770
Belle Fourche (I)	* 78	22	48	69	185,200
Lake Francis Case (FIP)	64	68	68	58	4,589,000
Lake Oahe (FIP)	* 86	65	66	87	22,240,000
Lake Sharpe (FIP)	103	101	100	99	1,697,000
Lewis and Clark Lake (FIP)	† 94	93	102	89	432,000
NEBRASKA					
Lake McConaughy (IP)	74	57	72	73	1,948,000
OKLAHOMA					
Eufaula Lake (FPR)	* 96	108	88	98	2,378,000
Keystone Lake (FPR)	† 81	121	88	85	661,000
Tenkiller Ferry Lake (FPR)	* 104	120	93	104	628,200
Lake Altus (FIMR)	* 61	96	52	59	133,000
Lake O'The Cherokees (FPR)	* 91	103	81	91	1,492,000
OKLAHOMA-TEXAS					
Lake Texoma (FMPRW)	93	98	89	97	2,722,000
TEXAS					
Bridgeport (IMW)	* 94	91	51	94	386,400
Canyon Lake (FMR)	* 96	98	83	95	385,600
International Amistad (FIMPW)	84	100	87	86	3,497,000
International Falcon (FIMPW)	† 64	93	75	64	2,668,000
Livingston (IMW)	* 104	101	91	100	1,788,000
Possum Kingdom Lake (IMPRW)	† 82	88	94	82	570,200
Red Bluff (P)	35	51	32	33	307,000
Toledo Bend (P)	† 79	90	87	77	4,472,000
Twin Buttes (FIM)	* 60	81	38	59	177,800
Lake Kemp (IMW)	† 77	90	86	78	268,000
Lake Meredith (FMW)	34	40	37	34	796,900
Lake Travis (FIMPRW)	83	98	82	79	1,144,000
MONTANA					
Canyon Ferry Lake (FIMPR)	78	71	79	84	2,043,000
Fort Peck Lake (FPR)	78	55	80	77	18,910,000
Hungry Horse (FIPR)	† 33	32	66	44	3,451,000
WASHINGTON					
Ross (PR)	51	34	54	64	1,052,000
Franklin D. Roosevelt Lake (IP)	* 93	70	83	89	5,022,000
Lake Chelan (PR)	† 38	35	45	52	676,100
Lake Cushman (PR)	74	65	78	65	359,500
Lake Merwin (P)	* 101	98	97	100	245,600
IDAHO					
Boise River (4 reservoirs) (FIP)	54	54	57	54	1,235,000
Coeur d'Alene Lake (P)	† 22	22	48	26	238,500
Pend Oreille Lake (FP)	† 36	36	50	40	1,561,000
IDAHO-WYOMING					
Upper Snake River (8 reservoirs) (MP)	* 80	80	65	75	4,401,000
WYOMING					
Boysen (FIP)	* 80	72	71	83	802,000
Buffalo Bill (IP)	* 57	67	41	59	646,600
Keyhole (F)	36	10	39	36	193,800
Pathfinder, Seminoe, Alcova, Kortes, Glendo, and Guernsey reservoirs (I)	47	28	49	45	3,056,000
COLORADO					
John Martin (FIR)	22	14	21	15	364,400
Taylor Park (IR)	62	56	57	64	106,200
Colorado-Big Thompson Project (I)	* 72	55	57	72	730,300
COLORADO RIVER STORAGE PROJECT					
Lake Powell; Flaming Gorge, Fontenelle, Navajo, and Blue Mesa reservoirs (IFPR)	75	58	71	76	31,620,000
UTAH-IDAHO					
Bear Lake (IPR)	† 37	15	57	37	1,421,000
CALIFORNIA					
Folsom Lake (FIMPR)	† 36	52	52	40	1,000,000
Hetch Hetchy (MP)	* 70	30	33	72	360,400
Lake Isabella (FIR)	* 43	17	26	43	568,100
Pine Flat Lake (FIR)	† 40	21	47	38	1,001,000
Clair Engle Lake (Lewiston) (FP)	* 79	30	70	78	2,438,000
Lake Almanor (P)	* 69	67	53	67	1,036,000
Lake Berryessa (FIMRW)	† 46	46	78	48	1,600,000
Millerton Lake (FI)	† 49	63	63	44	503,200
Shasta Lake (FIPR)	69	61	68	68	4,377,000
CALIFORNIA-NEVADA					
Lake Tahoe (IMPRW)	† 0	0	48	0	744,600
NEVADA					
Rye Patch (I)	† 11	1	45	9	194,300
ARIZONA-NEVADA					
Lake Mead and Lake Mohave (FIMP)	* 83	80	72	82	27,970,000
ARIZONA					
San Carlos (IP)	* 57	98	28	56	935,100
Salt and Verde River System (IMPR)	* 70	87	46	69	2,019,100
NEW MEXICO					
Conchas (FIR)	* 79	84	14	78	315,700
Elephant Butte and Caballo (FIPR)	* 90	82	43	88	2,394,000

[1] 1 acre-foot = 0.04356 million cubic feet = 0.326 million gallons = 0.504 cubic feet per second per day.

[2] Thousands of kilowatt-hours (the potential electric power that could be generated by the volume of water in storage).

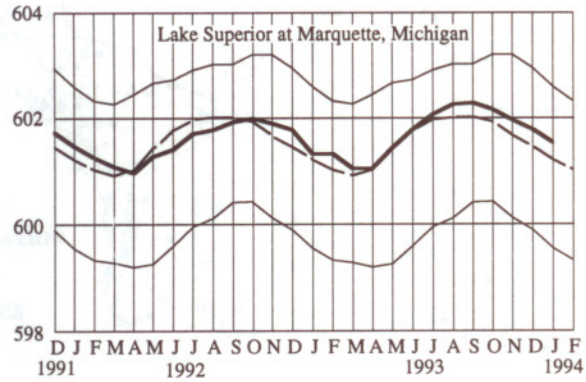
* Above-average range

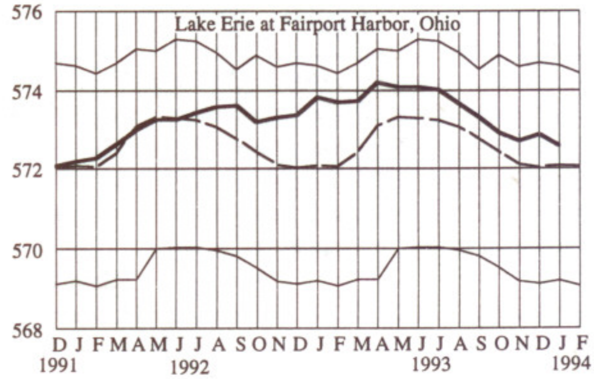
† Below-average range

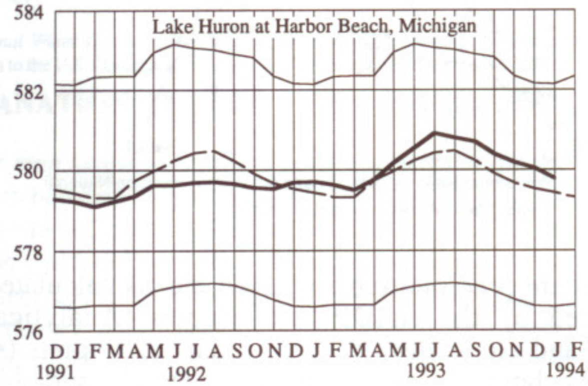
GREAT LAKES ELEVATIONS

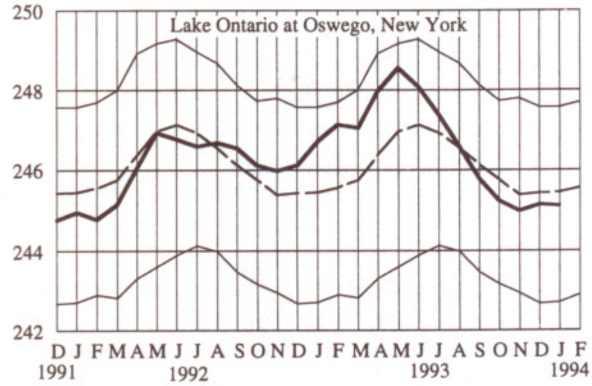
Area between light-weight solid lines indicates range between highest and lowest record for the month. Dashed line indicates median of monthly values for reference period 1961-90. Heavy line indicates mean for current period. Data from National Ocean Service.

ELEVATION, IN FEET ABOVE NATIONAL GEODETIC VERTICAL DATUM OF 1929

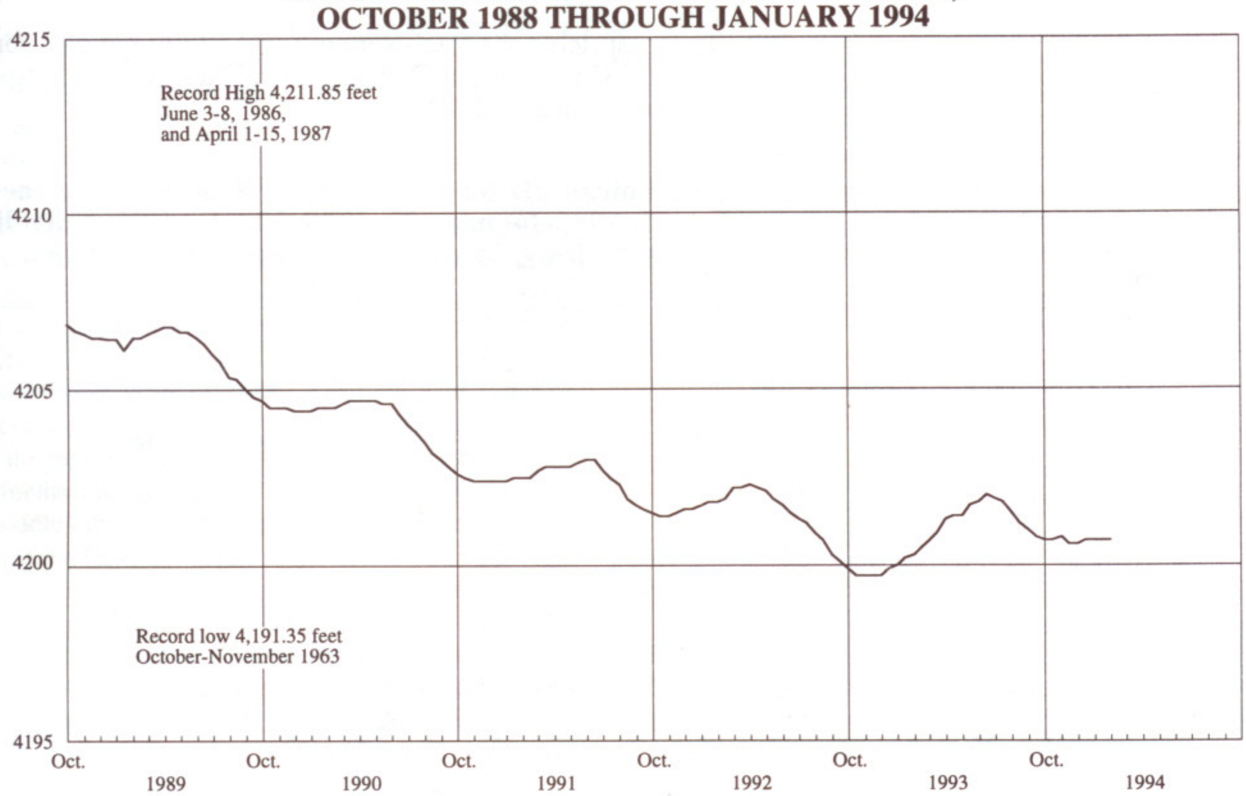




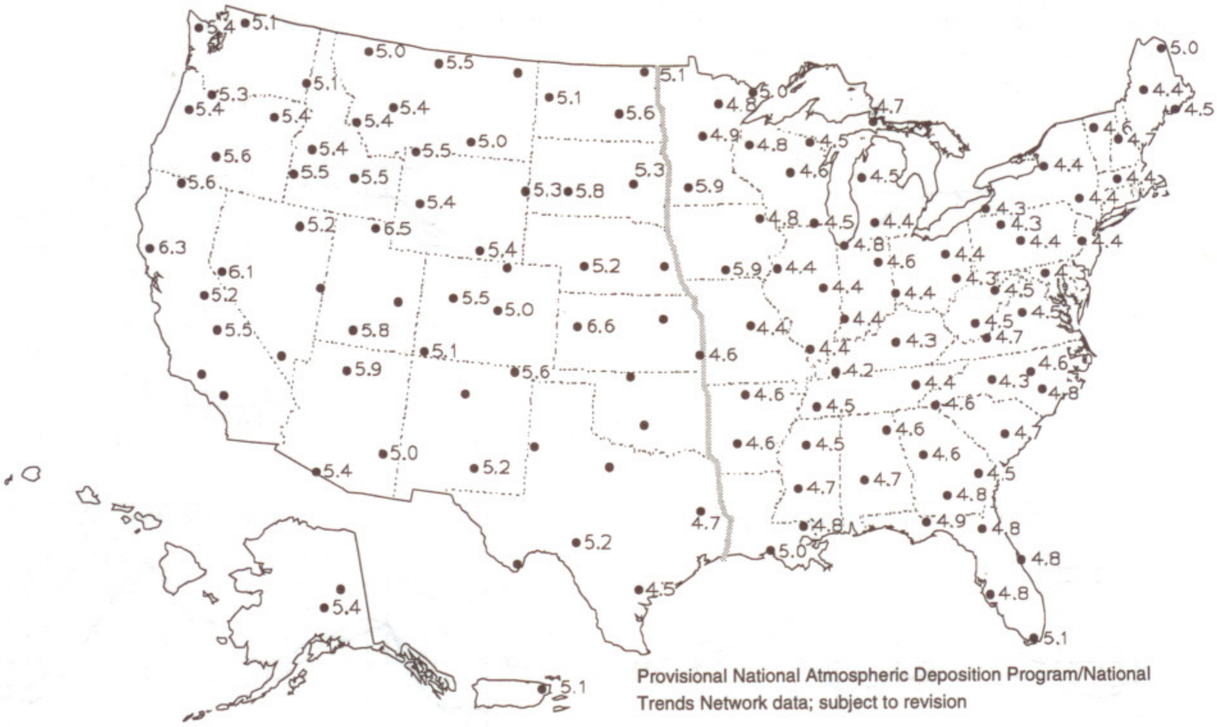




FLUCTUATIONS OF THE GREAT SALT LAKE, OCTOBER 1988 THROUGH JANUARY 1994



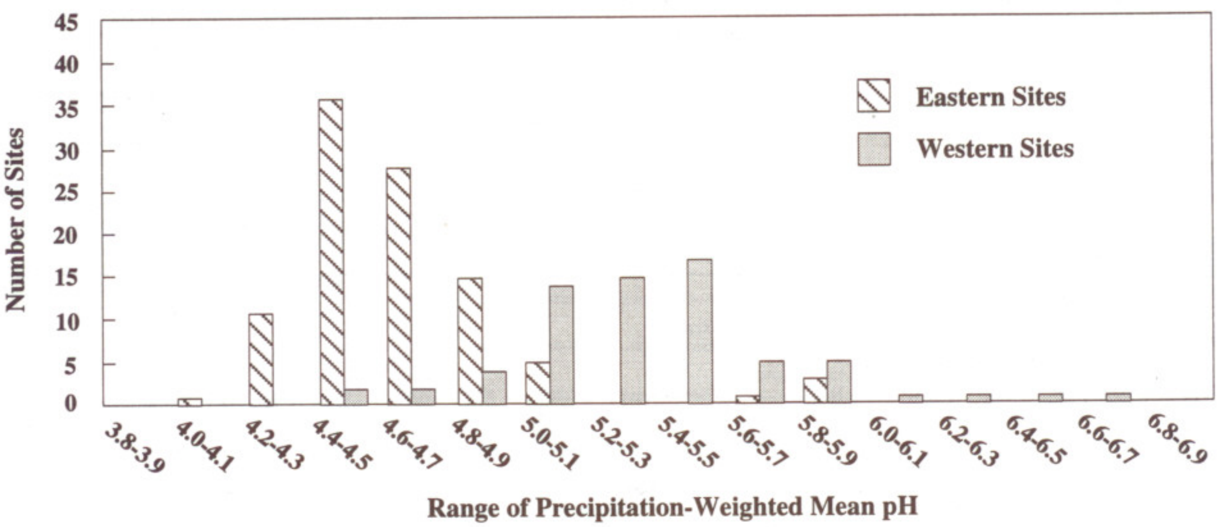
pH of Precipitation for December 27, 1993-January 23, 1994



Current pH data shown on the map (• 4.9) are precipitation-weighted means calculated from preliminary laboratory results provided by the NADP/NTN Central Analytical Laboratory at the Illinois State Water Survey and are subject to change. The 129 points (•) shown on this map represent a subset of all sites chosen to provide relatively even geographic spacing. Absence of a pH value at a site indicates either that there was no precipitation or that data for the site did not meet preliminary screening criteria for this provisional report.

A list of the approximately 200 sites comprising the total Network and additional data for the sites are available from the NADP/NTN Coordination Office, Natural Resource Ecology Laboratory, Colorado State University, Fort Collins, CO 80523.

Distribution of precipitation-weighted mean pH for all NADP/NTN sites having one or more weekly samples for December 27, 1993-January 23, 1994. The East/West dividing line is at the western borders of Minnesota, Iowa, Missouri, Arkansas, and Louisiana.



JANUARY 1994

Based on reports from the Canadian and U.S. Field offices; completed May 2, 1994

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Page showing pH of precipitation data furnished by Office of Atmospheric Deposition.

The *National Water Conditions* is published monthly. Subscriptions are free on application to the U.S. Geological Survey, 419 National Center, Reston, VA 22092.

EXPLANATION OF DATA (Revised April 1994)

Cover map shows generalized pattern of streamflow for the month based on provisional data from 186 index gaging stations—18 in Canada, 166 in the United States, and 2 in the Commonwealth of Puerto Rico. Alaska, Hawaii, and Puerto Rico inset maps show streamflow only at the index gaging stations that are located near the point shown by the arrows. Classifications on map are based on comparison of streamflow for the current month at each index station with the flow for the same month in the 30-year reference period, 1961-90. Shorter reference periods are used for one index station in Utah and both of the Puerto Rico index stations. Streamflow data presented herein are those published in the annual series of U.S. Geological Survey reports titled *Water Resources Data* (State) through the end of the 1992 water year—September 30, 1992. All other data are provisional.

The comparative data are obtained by ranking the 30 flows for each month of the reference period in order of decreasing magnitude—the highest flow is given a ranking of 1 and the lowest flow is given a ranking of 30. Quartiles (25-percent points) are computed by weighted averaging of the 7th and 8th highest flows (upper quartile), 15th and 16th highest flows (middle quartile or median), and the 23rd and 24th highest flows (lower quartile). The upper and lower quartiles set off the highest and lowest 25 percent of flows, respectively, for the reference period. The median (middle quartile) is the middle value by definition. For the reference period, 50 percent of the flows are greater than the median, 50 percent are less than the median, 50 percent are between the upper and lower quartiles (in the normal range), 25 percent are greater than the upper quartile (above normal), and 25 percent are less than the lower quartile (below normal). Flow for the current month is then classified as: in the ***above-normal range*** if it is greater than the upper quartile, in the ***normal range*** if it is between the upper and lower quartiles, and in the ***below-normal range*** if it is less than the lower quartile. Change in flow from the previous month to the current month is classified as ***seasonal*** if the change is in the same direction as the change in the median. If the change is in the opposite direction of the change in the median, the change is classified as ***contraseasonal***. For example: at a particular index station, the January median is greater than the December median; if flow for the current January increased from December (the previous month), the increase is seasonal; if flow for the current January decreased from December, the decrease is contraseasonal.

Flood frequency analyses define the relation of flood peak magnitude to probability of occurrence or recurrence interval. ***Probability of occurrence*** is the chance that a given flood magnitude will be exceeded in any one year. ***Recurrence interval*** is the reciprocal of probability of occurrence and is the average number of years between occurrences. For example, a flood having a probability of occurrence of 0.01 (1 percent) has a recurrence interval of 100 years. ***Recurrence intervals imply no regularity of occurrence***; a 100-year flood might be exceeded in consecutive years or it might not be exceeded in a 100-year period.

Dissolved solids and temperature data are given for two stream-sampling sites that are part of the National Stream Quality Accounting Network (NASQAN). ***Dissolved solids*** are minerals dissolved in water and usually consist predominately of silica and ions of calcium, magnesium, sodium, potassium, carbonate, bicarbonate, sulfate, chloride, and nitrate. ***Dissolved-solids discharge*** represents the total daily amount of dissolved minerals carried by the stream. ***Dissolved-solids concentrations*** are generally higher during periods of low streamflow, but the highest dissolved-solids discharges occur during periods of high streamflow because the total quantities of water, and therefore total load of dissolved minerals, are so much greater than at times of low flow.

FACTORS FOR CONVERTING INCH-POUND UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

Multiply inch-pound units	By	To obtain SI units
	Length	
inches	2.54×10^{1}	millimeters (mm)
	2.54×10^{-2}	meters (m)
feet	3.048×10^{-1}	meters (m)
miles	1.609×10^{3}	kilometers (km)
	Area	
square miles	2.590×10^{0}	square kilometers (km^2)
	Volume	
acre-feet (acre-feet)	1.233×10^{-3}	cubic hectometers (hm^3)
	1.233×10^{-6}	cubic hectometers (km^3)
	Flow	
cubic feet per second (ft^3/s)	2.832×10^{-2}	cubic meters per second (m^3/s)

*U.S. Government Printing Office: 1994 — 301-071/00001